CPC COOPERATIVE PATENT CLASSIFICATION

G01P MEASURING LINEAR OR ANGULAR SPEED, ACCELERATION, DECELERATION, OR SHOCK; INDICATING PRESENCE, ABSENCE, OR DIRECTION, OF MOVEMENT (measuring or recording blood flow A61B 5/02, A61B 8/06; monitoring speed or deceleration of electrically-propelled vehicles B60L 3/00; vehicle lighting systems adapted to indicate speed B60Q 1/54; determining position or course in navigation, measuring ground distance in geodesy or surveying G01C; combined measuring devices for measuring two or more variables of movement G01C 23/00; measuring velocity of sound G01H; measuring velocity of light G01J 7/00; measuring direction or velocity of solid objects by reception or emission of radiowaves or other waves and based on propagation effects, e.g. Doppler effect, propagation time, direction of propagation, G01S; measuring speed of nuclear radiation G01T; measuring acceleration of gravity G01V; { measuring or recording the speed of trains B61L 23/00; speed indicators incorporated in motor vehicles B60K 35/00; measuring frequency or phase G01R; traffic control G08G})

NOTE

This subclass covers measuring direction or velocity of flowing fluids using propagation effects of radiowaves or other waves caused in the fluid itself, e.g. by laser anemometer, by ultrasonic flowmeter with "sing-around-system".

Attention is drawn to the Notes following the title of class G01.

G01P 1/00 Details of instruments

G01P 1/003 . {used for damping}

G01P 1/006 . {used for thermal compensation}

G01P 1/02 . Housings

G01P 1/023 . . {for acceleration measuring devices}

G01P 1/026 . . {for speed measuring devices, e.g. pulse generator}

G01P 1/04 . Special adaptations of driving means

G01P 1/06 . Indicating or recording devices, e.g. for remote indication {(indicating or recording in general G01D; registering or indicating working conditions of vehicles G07C 5/00)}

WARNING

This group is no longer used for the classification of new documents from April 1, 2005. The backlog of this group is being continuously reclassified to G01P 1/07, and G01P 1/12 and s.gr.

G01P 1/07 . indicating devices, e.g. for remote indication (indicating working conditions of vehicles

G07C 5/00)

G01P 1/08 . . Arrangements of scales, pointers, lamps or acoustic indicators, e.g. in automobile speedometers

G01P 1/10 . . . for indicating predetermined speeds

G01P 1/103 . . . . {by comparing the value of the measured signal with one or several reference values (in general G01R 17/00)}

G01P 1/106 . . . . {by comparing the time duration between two impulses with a reference time}

G01P 1/11 . . . . by the detection of the position of the indicator needle

G01P 1/12 . Recording devices (indicating working conditions of vehicles G07C 5/00)

G01P 1/122 . . {Speed recorders}

G01P 1/125 . . . {with recording discs}

G01P 1/127 . . {for acceleration values}

G01P 1/14 . . for permanent recording {(G01P 1/125 takes precedence)}

G01P 1/16 . . for erasable recording, e.g. magnetic recording

G01P 3/00 **Measuring linear or angular speed; Measuring differences of linear or angular speeds** (G01P 5/00 to G01P 11/00 take precedence; {direction and speed indication G01P 13/045}; counting mechanisms G06M)

NOTE

The sub-groups of this group are distinguished by the method of measurement which is of major importance. Thus the mere application of other methods for giving a final indication does not affect the classification.

G01P 3/02 . Devices characterised by the use of mechanical means

G01P 3/04 . . by comparing two speeds

G01P 3/06 . . . using a friction gear

G01P 3/08 . . . using differential gearing

G01P 3/10 . . by actuating an indicating element, e.g. pointer, for a fixed time

G01P 3/12 . . by making use of a system excited by impact

G01P 3/14 . . by exciting one or more mechanical resonance systems

G01P 3/16 . . by using centrifugal forces of solid masses {(governors G05D 13/10)}

G01P 3/18 . . . transferred to the indicator by mechanical means

G01P 3/20 . . . transferred to the indicator by fluid means

G01P 3/22 . . . transferred to the indicator by electric or magnetic means

G01P 3/24 . . by using friction effects (G01P 3/06 takes precedence)

G01P 3/26 . Devices characterised by the use of fluids

G01P 3/263 . . {by using fluidic impulse generators}

G01P 3/266 . . {by using a vortex chamber}

G01P 3/28 . . by using pumps

G01P 3/30 . . by using centrifugal forces of fluids

G01P 3/32 . . . in a rotary container communicating with a fixed container

G01P 3/34 . . by using friction effects

G01P 3/36 . Devices characterised by the use of optical means, e.g. using infra-red, visible, or ultra-violet light (G01P 3/68 takes precedence; gyrometers using the Sagnac effect, i.e. rotation-induced shifts between counter-rotating electromagnetic beams G01C 19/64)

G01P 3/363 . . {by using a ring laser (ring lasers in general H01S 3/083)}

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G01P 3/366 . . {by using diffraction of light (for measuring speed of fluids G01P 5/26)}

G01P 3/38 . . using photographic means

G01P 3/40 . . using stroboscopic means

G01P 3/42 . Devices characterised by the use of electric or magnetic means (G01P 3/66 takes precedence; measuring electric or magnetic values in general G01R)

G01P 3/44 . . for measuring angular speed (G01P 3/56 takes precedence)

G01P 3/443 . . . {mounted in bearings (bearings F16C)}

G01P 3/446 . . . . {mounted between two axially spaced rows of rolling elements}

G01P 3/46 . . . by measuring amplitude of generated current or voltage {(in general G01R 19/00)}

G01P 3/465 . . . . {by using dynamo-electro tachometers or electric generator}

G01P 3/48 . . . by measuring frequency of generated current of voltage {(in general G01R 23/00)}

G01P 3/4802 . . . . {by using electronic circuits in general}

G01P 3/4805 . . . . . {by using circuits for the electrical integration of the generated pulses (measuring impulse frequency by integration G01R 23/09)}

G01P 3/4807 . . . . . {by using circuits for the detection of the pulses delivered by the ignition system of an internal combustion engine}

G01P 3/481 . . . . of pulse signals

G01P 3/4815 . . . . . {using a pulse wire sensor, e.g. Wiegand wire}

G01P 3/482 . . . . . delivered by nuclear radiation detectors

G01P 3/483 . . . . . delivered by variable capacitance detectors

G01P 3/484 . . . . . delivered by contact-making switches

G01P 3/486 . . . . . delivered by photo-electric detectors

G01P 3/487 . . . . . delivered by rotating magnets

G01P 3/488 . . . . . delivered by variable reluctance detectors

G01P 3/489 . . . . . Digital circuits therefor

G01P 3/49 . . . using eddy currents

G01P 3/495 . . . . where the indicating means responds to forces produced by the eddy currents and the generating magnetic field

G01P 3/4953 . . . . . {with a counter for the covered distance incorporated (measuring the covered distance G01C 22/00)}

G01P 3/4956 . . . . . {with thermal compensation}
G01P 3/50 . . for measuring linear speed (G01P 3/56 takes precedence)
G01P 3/505 . . . {by using eddy currents}
G01P 3/52 . . . by measuring amplitude of generated current or voltage
G01P 3/54 . . . by measuring frequency of generated current or voltage
G01P 3/56 . . for comparing two speeds
G01P 3/565 . . . {by measuring or by comparing the phase of generated current or voltage (phase comparators per se H03D 13/00; phase measurement G01R 25/00)}
G01P 3/58 . . . by measuring or comparing amplitudes of generated currents or voltage {(amplitude comparators H03K 5/24)}
G01P 3/60 . . . by measuring or comparing frequency of generated currents or voltages {(frequency comparators H03K 5/26)}

G01P 3/62 . Devices characterised by the determination or the variation of atmospheric pressure with height to measure the vertical components of speed (measuring pressure in general G01L)

G01P 3/64 . Devices characterised by the determination of the time taken to traverse a fixed distance
G01P 3/66 . . using electric or magnetic means (G01P 3/80 takes precedence; measuring short time intervals G04F 8/00, G04F 10/00)
G01P 3/665 . . . {for projectile velocity measurements}
G01P 3/68 . . using optical means, i.e. using infra-red, visible, or ultra-violet light (G01P 3/80 takes precedence; { by reflection of waves G01S 17/58})
G01P 3/685 . . . {for projectile velocity measurements}
G01P 3/80 . . using auto-correlation or cross-correlation detection means
G01P 3/803 . . . {in devices of the type to be classified in G01P 3/66}
G01P 3/806 . . . {in devices of the type to be classified in G01P 3/68}

G01P 5/00 **Measuring speed of fluids, e.g. of air stream; Measuring speed of bodies relative to fluids, e.g. of ship, of aircraft** (application of speed-measuring devices for measuring volume of fluid G01F)

G01P 5/001 . {Full-field flow measurement, e.g. determining flow velocity and direction in a whole region at the same time, flow visualisation}

G01P 5/003 . {by measuring fluid level in front of an obstacle}

G01P 5/005 . {by using a jet directed into the fluid}
G01P 5/006 . . {the jet used is composed of ionised or radioactive particles}

G01P 5/008 . {by using an electrolyte added to the fluid}

G01P 5/01 . by using swirlflowmeter

G01P 5/02 . by measuring forces exerted by the fluid on solid bodies, e.g. anemometer
G01P 5/04 . . using deflection of baffle-plates
G01P 5/06 . . using rotation of vanes (measuring speed of rotating shafts G01P 3/00)

G01P 5/065 . . . {with mechanical coupling to the indicating device}

G01P 5/07 . . . with electrical coupling to the indicating device

G01P 5/08 . by measuring variation of an electric variable directly affected by the flow, e.g. by using dynamo-electric effect

G01P 5/083 . . {by using electronic circuits for measuring the dynamoelectric effect}

G01P 5/086 . . {by using special arrangements and constructions for measuring the dynamo-electric effect}

G01P 5/10 . by measuring thermal variables

G01P 5/12 . . using variation of resistance of a heated conductor

G01P 5/14 . by measuring differences of pressure in the fluid

G01P 5/16 . . using Pitot tubes, {e.g. Machmeter}

G01P 5/165 . . . Arrangements or constructions of Pitot tubes

G01P 5/17 . . . Coupling arrangements to the indicating device

G01P 5/175 . . . . with the determination of Mach number (analogue computers therefor G06G 7/57)

G01P 5/18 . by measuring the time taken to traverse a fixed distance

G01P 5/20 . . using particles entrained by a fluid stream (G01P 5/22 takes precedence)

G01P 5/22 . . using auto-correlation or cross-correlation detection means

G01P 5/24 . by measuring the direct influence of the streaming fluid on the properties of a detecting acoustical wave

G01P 5/241 . . {by using reflection of acoustical waves, i.e. Doppler-effect}

G01P 5/242 . . . {involving continuous, e.g. modulated or unmodulated, waves (G01P 5/244 takes precedence)}

G01P 5/244 . . . {involving pulsed waves}

G01P 5/245 . . {by measuring transit time of acoustical waves (measuring propagation velocity of acoustical waves per se G01H 5/00)}

G01P 5/247 . . . {Sing-around-systems}

G01P 5/248 . . . {by measuring phase differences}

G01P 5/26 . by measuring the direct influence of the streaming fluid on the properties of a detecting optical wave

G01P 7/00 **Measuring speed by integrating acceleration** (measuring travelled distance by double integration of acceleration G01C 21/16)

G01P 9/00 **Measuring speed by using gyroscopic effect, e.g. using gas, using electron beam** (gyroscopes or turn-sensitive devices per se G01C 19/00)

NOTE

Absolute angular speed sensors are classified under G01C 9/00 and s.gr.

G01P 9/02 . using rotary gyroscopes

G01P 9/04 . using turn-sensitive devices with vibrating masses, e.g. tuning-fork

WARNING

This group is not used in ECLA; its scope is covered by G01C 19/56 and s.gr.

G01P 11/00 **Measuring average value of speed** (by determining time taken to traverse a fixed distance G01P 3/64, G01P 5/18)

G01P 11/02 . Measuring average speed of number of bodies, e.g. of vehicles for traffic control

G01P 13/00 **Indicating or recording presence, absence, or direction, of movement** (electric switches H01H; counting moving objects G06M 7/00)

G01P 13/0006 . {of fluids or of granulous or powder-like substances}
G01P 13/0013 . . {by using a solid body which is shifted by the action of the fluid}
G01P 13/002 . . . {with electrical coupling to the indicating devices}
G01P 13/0026 . . {by using deflection of baffle-plates}
G01P 13/0033 . . . {with electrical coupling to the indicating device}
G01P 13/004 . . {by using the rotation of vanes}
G01P 13/0046 . . . {with electrical coupling to the indicating device}
G01P 13/0053 . . {by using dynamo-electric effect}
G01P 13/006 . . {by using thermal variables}
G01P 13/0066 . . {by using differences of pressure in the fluid}
G01P 13/0073 . . {by using vibrations generated by the fluid}

G01P 13/008 . { by using a window mounted in the fluid carrying tube G01P 13/0013, G01P 13/0026, G01P 13/004 take precedence}
G01P 13/0086 . . {with photo-electric detection}

G01P 13/0093 . {by making use of products, e.g. chemical products added to the fluid in order to make the fluid flow visible}

G01P 13/02 . Indicating direction only, e.g. by weather vane
G01P 13/025 . . {indicating air data, i.e. flight variables of an aircraft, e.g. angle of attack, side slip, shear, yaw}
G01P 13/04 . . Indicating positive or negative direction of a linear movement or clockwise or anti-clockwise direction of a rotational movement
G01P 13/045 . . . {with speed indication}

G01P 15/00 **Measuring acceleration; Measuring deceleration; Measuring shock, i.e. sudden change of acceleration**

G01P 15/001 . {by measuring acceleration changes by making use of a triple differentiation of a

displacement signal}

G01P 15/003 . {Kinematic accelerometers, i.e. measuring acceleration in relation to an external reference frame, e.g. Ferratis accelerometers (G01P 15/001, G01P 15/16, G01P 15/165 take precedence)}

G01P 15/005 . . {measuring translational acceleration}

G01P 15/006 . {by making use of fluid seismic masses}

G01P 15/008 . . {by using thermal pick-up}

G01P 15/02 . by making use of inertia forces { using solid seismic masses}(G01P 15/14 takes precedence)

G01P 15/03 . . by using non-electrical means

G01P 15/032 . . . {by measuring the displacement of a movable inertial mass}

G01P 15/034 . . . . {for indicating angular accelerations (G01P 15/036 takes precedence)}

G01P 15/036 . . . . {for indicating predetermined acceleration values}

G01P 15/038 . . . {by using fluidic means}

G01P 15/04 . . for indicating maximum value

G01P 15/06 . . . using members subjected to a permanent deformation

G01P 15/08 . . with conversion into electric or magnetic values

G01P 15/0802 . . . {Details}

G01P 15/0885 . . . {by magnetostrictive pick-up}

G01P 15/0888 . . . {for indicating angular acceleration}

G01P 15/0891 . . . {with indication of predetermined acceleration values (G01P 15/135 takes precedence)}

G01P 15/0894 . . . {by non-contact electron transfer, i.e. electron tunneling}

G01P 15/0897 . . . {by thermal pick-up (G01P 15/008 takes precedence)}

G01P 15/09 . . . {by piezo-electric pick-up}

G01P 15/0907 . . . . {of the compression mode type}

G01P 15/0915 . . . . {of the shear mode type}

G01P 15/0922 . . . . {of the bending or flexing mode type}

G01P 15/093 . . . by photo-electric pick-up

G01P 15/097 . . . by vibratory elements

G01P 15/0975 . . . . {by acoustic surface wave resonators or delay lines}

G01P 15/10 . . . . by vibratory strings

G01P 15/105 . . . by magnetically sensitive devices

G01P 15/11 . . . by inductive pick-up

G01P 15/12 . . . by alteration of electrical resistance {(G01P 15/0897, G01P 15/105 take precedence)}

G01P 15/121 . . . . {by potentiometers}

G01P 15/122 . . . . {by metal resistance strain gauges, e.g. wire resistance strain gauges}

G01P 15/123 . . . . {by piezo-resistive elements, e.g. semiconductor strain gauges}

G01P 15/124 . . . . {by semiconductor devices comprising at least one PN junction, e.g. transistors}

G01P 15/125 . . . by capacitive pick-up

G01P 15/13 . . . by measuring the force required to restore a proofmass subjected to inertial forces to a null position

G01P 15/131 . . . . {with electrostatic counterbalancing means}

G01P 15/132 . . . . {with electromagnetic counterbalancing means}

G01P 15/133 . . . . {with piezo-electric counterbalancing means}

G01P 15/135 . . . by making use of contacts which are actuated by a movable inertial mass

G01P 15/14 . by making use of gyroscopes (gyroscopes per se G01C 19/00)

G01P 15/16 . by evaluating the time-derivative of a measured speed signal

G01P 15/165 . . {for measuring angular accelerations}

G01P 15/18 . in two or more dimensions

G01P 21/00 Testing or calibrating of apparatus of devices covered by the preceding groups

G01P 21/02 . of speedometers

G01P 21/025 . . {for measuring speed of fluids; for measuring speed of bodies relative to fluids (for measuring volume flow G01F 25/0007)}

G01P 2015/00 Measuring acceleration; Measuring deceleration; Measuring shock, i.e. sudden change of acceleration

G01P 2015/02 . by making use of inertia forces { using solid seismic masses}(G01P 15/14 takes precedence)

G01P 2015/08 . . with conversion into electric or magnetic values

G01P 2015/0805 . . . being provided with a particular type of spring-mass-system for defining the displacement of a seismic mass due to an external acceleration

G01P 2015/0808 . . . . for defining in-plane movement of the mass, i.e. movement of the mass in the plane of the substrate

G01P 2015/0811 . . . . . for one single degree of freedom of movement of the mass

G01P 2015/0814 . . . . . for translational movement of the mass, e.g. shuttle type

G01P 2015/0817 . . . . . for pivoting movement of the mass, e.g. in-plane pendulum

G01P 2015/082 . . . . . for two degrees of freedom of movement of a single mass

G01P 2015/0822 . . . . for defining out-of-plane movement of the mass

G01P 2015/0825 . . . . . for one single degree of freedom of movement of the mass

G01P 2015/0828 . . . . . the mass being of the paddle type being suspended at one of its longitudinal ends

G01P 2015/0831 . . . . . the mass being of the paddle type having the pivot axis between the longitudinal ends of the mass, e.g. see-saw configuration

G01P 2015/0834 . . . . . the mass constituting a pendulum having the pivot axis disposed symmetrically between the longitudinal ends, the center of mass being shifted away from the plane of the pendulum which includes the pivot axis

G01P 2015/0837	. . . . .	the mass being suspended so as to only allow movement perpendicular to the plane of the substrate, i.e. z-axis sensor
G01P 2015/084	. . . . .	the mass being suspended at more than one of its sides, e.g. membrane-type suspension, so as to permit multi-axis movement of the mass
G01P 2015/0842	. . . . .	the mass being of clover leaf shape
G01P 2015/0845	. . . .	using a plurality of spring-mass systems being arranged on one common planar substrate, the systems not being mechanically coupled and the sensitive direction of each system being different
G01P 2015/0848	. . . .	using a plurality of mechanically coupled spring-mass systems, the sensitive direction of each system being different
G01P 2015/0851	. . . .	using a plurality of spring-mass systems, each system having a different range of sensitivity to acceleration
G01P 2015/0854	. . . .	using a particular shape of the mass, e.g. annular
G01P 2015/0857	. . . .	using a particular shape of the suspension spring
G01P 2015/086	. . . . .	using a torsional suspension spring
G01P 2015/0862	. . .	being provided with particular means being integrated into a MEMS accelerometer structure for providing particular additional functionalities to those of a spring mass system
G01P 2015/0865	. . . .	using integrated signal processing circuitry
G01P 2015/0868	. . . .	using self-test structures integrated into the microstructure
G01P 2015/0871	. . . .	using stopper structures for limiting the travel of the seismic mass
G01P 2015/0874	. . . .	using means for preventing stiction of the seismic mass to the substrate
G01P 2015/0877	. . . .	using integrated interconnect structures
G01P 2015/088	. . . .	for providing wafer-level encapsulation
G01P 2015/0882	. . . .	for providing damping of vibrations